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EXAMINER	
LEUNG, CHRISTINA Y	

ART UNIT	PAPER NUMBER
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/931,643	SCHOFIELD ET AL.	
	Examiner	Art Unit	
	Christina Y. Leung	2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-49* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-5, 9-22, and 26-34 are rejected under 35 U.S.C. 102(e) as being anticipated by Chaudhuri et al. (US 2002/030864 A1).

Regarding claim 1, Chaudhuri et al. disclose a network device (Figure 1) comprising:

optical switching logic (including one of the optical layer cross-connects [OLXCs]; pages 2 and 3, paragraphs [0030]-[0033]) between a plurality of input optical interfaces and a plurality of output optical interfaces, for selectively forwarding an optical data stream having a given wavelength to either one of the optical interfaces for output on at least one optical fiber or to routing logic (i.e., a corresponding IP router); and

wherein the routing logic is operably coupled to the switching logic to selectively receive the optical data stream from the optical switching logic and retrieve routing information from the optical data stream wherein the routing information is used to dynamically control the forwarding of subsequent optical data streams transmitted at the given wavelength through the optical switch logic to one of the output optical interfaces on the at least one optical fiber (page 4, paragraphs [0042-0043]; page 13, paragraph [0150]).

Examiner respectfully notes that Chaudhuri et al. disclose that the optical switching logic (i.e., the optical layer cross-connects) selectively forward an optical data stream having given wavelengths to either one of the optical interfaces for output on at least one optical fiber or to routing logic depending on whether that data stream is data output should be forwarded to an adjacent optical switch node or a message for a the routing logic.

Regarding claim 18, Chaudhuri et al. disclose a system comprising at least two network devices, each network device including optical switching logic and routing logic as discussed above with regard to claim 1. Figure 1 shows six network devices by way of example.

Regarding claims 2 and 19, Chaudhuri et al. disclose that the optical switching logic OLXC is operably coupled to receive an incoming optical data stream from an incoming optical fiber over an incoming optical interface and selectively pass the incoming optical data stream through to an outgoing optical fiber over an outgoing optical interface or divert the incoming optical data stream for processing by the routing logic. For example, Figure 1 shows how OLXC B receives an incoming optical data stream from OLXC A via an optical fiber and an incoming optical interface; OLXC B selectively passes this data stream to another OLXC, or to the routing logic (i.e., the IP router).

Regarding claims 3 and 20, Chaudhuri et al. disclose that the optical switching logic comprises a demultiplexer operably coupled to demultiplex the incoming optical data stream from a number of incoming optical data streams received from the incoming optical fiber over the incoming optical interface (Figure 1 shows demultiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031]).

Regarding claims 4 and 21, Chaudhuri et al. disclose that the optical switching logic further comprises an optical switch (i.e., the optical layer cross-connect OLXC) operably coupled to receive the incoming optical data stream from the demultiplexer and to selectively pass the incoming optical data stream through to the outgoing optical fiber over the outgoing optical interface or divert the incoming optical data stream for processing by the routing logic (page 3, paragraph [0033]).

Regarding claims 5 and 22, Chaudhuri et al. disclose that the optical switch comprises an optical add/drop fabric (page 3, paragraph [0033]).

Regarding claims 9 and 26, Chaudhuri et al. disclose that the routing logic is operably coupled to forward outgoing digitally formatted information to the optical switching logic for forwarding to an outgoing optical fiber over an outgoing optical interface. Similarly, regarding claims 10 and 27, Chaudhuri et al. disclose that the optical switching logic is operably coupled to receive the outgoing digitally formatted information from the routing logic and output an outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface. Chaudhuri et al. disclose that the IP routers may be a source of data traffic to be transmitted optically through the optical switching logic and fibers; page 3, paragraph [0039]; page 4, paragraph [0042].

Regarding claims 11-13 and 28-30, Chaudhuri et al. disclose that the optical switching logic comprises an optical transmitter operably coupled to receive the outgoing digitally formatted information from the routing logic and produce the outgoing optical data stream from the digitally formatted information at a predetermined wavelength. Chaudhuri et al. disclose that

the optical transmitter may be either a fixed wavelength laser or a tunable laser (page 4, paragraph [0046]).

Regarding claims 14 and 31, Chaudhuri et al. disclose that the optical switching logic further comprises:

an optical switch (i.e., the optical layer cross-connect OLXC) operably coupled to receive the outgoing optical data stream from the optical transmitter;

a multiplexer operably coupled to receive the outgoing optical data stream from the optical switch and add the outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface (Figure 1 shows multiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031])..

Regarding claims 15 and 32, Chaudhuri et al. disclose that the optical switch comprises an optical add/drop fabric (page 3, paragraph [0033]).

Regarding claims 16 and 33, Chaudhuri et al. disclose that the optical switching logic further comprises a combiner operably coupled to receive the outgoing optical data stream from the optical transmitter and add the outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface (Figure 1 shows multiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031]).

Regarding claims 17 and 34, Chaudhuri et al. disclose that the networking device is an optical switch router and that the system is an optical switching/routing system.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

> such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 6-8 and 23-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhuri et al.

Regarding claims 6 and 23, Chaudhuri et al. disclose network devices as discussed above with regard to claims 1 and 18. Chaudhuri et al. disclose adding and dropping signals (page 3, paragraph [0033]), but they do not specifically disclose a drop-only fabric. However, it would have been obvious to a person of ordinary skill in the art to specifically have a drop-only fabric in the system described by Chaudhuri et al. simply as an engineering design choice to save costs and reduce complexity if users at that switching location in the system only wished to receive signals from the optical switch and did not require adding/transmitting them from the electrical domain.

Regarding claims 7, 8, 24, and 25, Chaudhuri et al. disclose network devices as discussed above with regard to claims 1 and 18. Chaudhuri et al. further disclose that the optical switching logic converts an incoming optical data stream into incoming digitally formatted information for processing by the routing logic and that the routing logic is operably coupled to receive the incoming digitally formatted information from the optical receiver and route the incoming digitally formatted information based upon a routing mechanism (page 4, paragraphs [0042-0043]; page 6, paragraphs [0077-0078]). Chaudhuri et al. do not specifically disclose an optical receiver, but it is well understood in the art that the optical data from the optical switching logic would require opto-electrical conversion in order for the data to be processed in the electrical domain of the routing logic. Regarding claims 7, 8, 24, and 25, it would have been obvious to a person of ordinary skill in the art to specifically include an optical receiver in the system

disclosed by Chaudhuri et al. in order to properly convert the optical data into electrical data for processing by the routing logic.

5. Claims 35-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chaudhuri et al. in view of Kirby (US 6,647,208 B1).

Regarding claim 35, as similarly discussed above with regard to claim 1, Chaudhuri et al. disclose a device (Figure 1) comprising:

a router interface (connections between optical layer cross-connects OLXCs and corresponding IP routers as shown in Figure 1)

optical switching logic (including one of the optical layer cross-connects [OLXCs]; pages 2 and 3, paragraphs [0030]-[0033]) operably coupled to receive an incoming optical data stream having a given wavelength from an incoming optical fiber over an incoming optical interface and selectively pass the incoming optical data stream either through to an outgoing optical fiber over an outgoing optical interface or to the router interface for processing by routing logic (i.e., a corresponding IP router); and

wherein the routing logic is operably coupled to the switching logic to selectively receive the optical data stream from the optical switching logic and retrieve routing information from the optical data stream wherein the routing information is used to dynamically control the forwarding of subsequent incoming optical data streams transmitted at the given wavelength through the optical switch logic to the outgoing optical fiber (page 4, paragraphs [0042-0043]; page 6, paragraph [0077]; page 7, paragraphs [0086] and [0089]; page 13, paragraph [0150]).

Chaudhuri et al. disclose that the routing logic may receive a setup message (selectively received from inputs that include control messages and data) and retrieve routing information

from the message that is used to dynamically control the forwarding of subsequent data streams on the channel and route specified by the setup message (page 6, paragraph [0077] and page 7, paragraphs [0086] and [0089]).

Chaudhuri et al. do not specifically disclose that the device may be an optical line card, but such cards are well known in the art as a type of hardware implementation for providing various network elements, such as those performing switching and routing functions, together as a unit or package. Kirby, for example, teaches optical network devices related to those disclosed by Chuadhuri et al. and further teach that some of the system elements may be provided on line cards (such as line cards 275 and 290 in Figure 2B). It would have been obvious to a person of ordinary skill in the art to specifically manufacture the system disclosed by Chaudhuri et al. as an optical line card as suggested by Kirby in order to conveniently package the optical switching elements together and allow it to be easily installed and used in existing network hardware arrangements.

Regarding claim 36, Chaudhuri et al. disclose that the optical switching logic comprises a demultiplexer operably coupled to demultiplex the incoming optical data stream from a number of incoming optical data streams received from the incoming optical fiber over the incoming optical interface (Figure 1 shows demultiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031]).

Regarding claim 37, Chaudhuri et al. disclose that the optical switching logic further comprises an optical switch (i.e., the optical layer cross-connect OLXC) operably coupled to receive the incoming optical data stream from the demultiplexer and to selectively pass the incoming optical data stream through to the outgoing optical fiber over the outgoing optical

interface or divert the incoming optical data stream for processing by the routing logic (page 3, paragraph [0033]).

Regarding claim 38, Chaudhuri et al. disclose that the optical switch comprises an optical add/drop fabric (page 3, paragraph [0033]).

Regarding claim 39, Chaudhuri et al. disclose adding and dropping signals (page 3, paragraph [0033]), but they do not specifically disclose a drop-only fabric. However, it would have been obvious to a person of ordinary skill in the art to specifically have a drop-only fabric in the system described by Chaudhuri et al. simply as an engineering design choice to save costs and reduce complexity if users at that switching location in the system only wished to receive signals from the optical switch and did not require adding/transmitting them from the electrical domain.

Regarding claims 40 and 41, Chaudhuri et al. disclose that the optical switching logic converts an incoming optical data stream into incoming digitally formatted information for processing by the routing logic and that the routing logic is operably coupled to receive the incoming digitally formatted information from the optical receiver and route the incoming digitally formatted information based upon a routing mechanism (page 4, paragraphs [0042-0043]; page 6, paragraphs [0077-0078]). Chaudhuri et al. do not specifically disclose an optical receiver, but it is well understood in the art that the optical data from the optical switching logic would require opto-electrical conversion in order for the data to be processed in the electrical domain of the routing logic. Regarding claim 40 and 41, it would have been obvious to a person of ordinary skill in the art to specifically include an optical receiver in the system disclosed by

Chaudhuri et al. in order to properly convert the optical data into electrical data for processing by the routing logic.

Regarding claim 42, Chaudhuri et al. disclose that the optical switching logic is operably coupled to receive the outgoing digitally formatted information from the routing logic and output an outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface. Chaudhuri et al. disclose that the IP routers may be a source of data traffic to be transmitted optically through the optical switching logic and fibers; page 3, paragraph [0039]; page 4, paragraph [0042].

Regarding claims 43-45, Chaudhuri et al. disclose that the optical switching logic comprises an optical transmitter operably coupled to receive the outgoing digitally formatted information from the routing logic and produce the outgoing optical data stream from the digitally formatted information at a predetermined wavelength. Chaudhuri et al. disclose that the optical transmitter may be either a fixed wavelength laser or a tunable laser (page 4, paragraph [0046]).

Regarding claim 46, Chaudhuri et al. disclose that the optical switching logic further comprises:

an optical switch (i.e., the optical layer cross-connect OLXC) operably coupled to receive the outgoing optical data stream from the optical transmitter;

a multiplexer operably coupled to receive the outgoing optical data stream from the optical switch and add the outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface (Figure 1 shows multiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031])..

Regarding claim 47, Chaudhuri et al. disclose that the optical switch comprises an optical add/drop fabric (page 3, paragraph [0033]).

Regarding claim 48, Chaudhuri et al. disclose that the optical switching logic further comprises a combiner operably coupled to receive the outgoing optical data stream from the optical transmitter and add the outgoing optical data stream to the outgoing optical fiber over the outgoing optical interface (Figure 1 shows multiplexers, part of the elements labeled "WDM system"; page 2, paragraph [0031]).

Regarding claim 49, Chaudhuri et al. do not specifically disclose that the incoming and outgoing optical interfaces are on an optical physical card in the system discussed above but again, such cards are well known in the art as a way to provide interfaces and elements that are easy to remove or replace, as Kirby already suggests (Kirby teaches line cards 275, 290, 305, 320, and 325, shown in Figures 28 and 3, for input and outputting signals). It would have been obvious to a person of ordinary skill in the m to include an optical physical card in the system disclosed by Chaudhuri et al. as taught by Kirby as a known hardware device for providing optical input and output connections, and to further include an interface for the switching device hardware already described by Chaudhuri et al. in view of Kirby so that it would be able to communicate with the optical physical card.

Response to Arguments

6. Applicants' arguments filed 27 June 2005 have been fully considered but they are not persuasive.

Regarding claims 1-34, Examiner respectfully disagrees with Applicants' assertion on page 12 of their response that Chaudhuri et al. do not disclose the limitations of claim 1. On the

contrary, Examiner respectfully notes that Chaudhuri et al. disclose that the optical switching logic (i.e., the optical layer cross-connects) selectively forward an optical data stream having a given wavelength to either one of the optical interfaces for output on at least one optical fiber or to routing logic depending on whether that data stream is data output should be forwarded to an adjacent optical switch node or a message for a the routing logic. Chaudhuri et al. also disclose that the routing logic may process traffic in addition to control messages (page 2, paragraph [0014] and therefore would also selectively receive data streams destined for the routing logic.

Also, contrary to Applicants' assertion on pages 13 and 16 of their response, Chaudhuri et al. do not necessarily disclose only dedicated control wavelengths. For example, they also disclose that control information may be alternatively carried as overhead on a chosen data light path channel (page 4, paragraphs [0046-0048]).

Regarding claims 35-49 in particular, Examiner respectfully notes that the rejections rely on Kirby mainly to provide a teaching that optical line cards may be used to physically implement the elements already disclosed by Chaudhuri et al. Again, Chaudhuri et al. disclose that the optical switching logic (i.e., the optical layer cross-connects) selectively forward an optical data stream having a given wavelength to either one of the optical interfaces for output on at least one optical fiber or to routing logic depending on whether that data stream is data output should be forwarded to an adjacent optical switch node or a message for a the routing logic.

Examiner also respectfully disagrees with Applicants' assertion on page 16 of their response that "there is no mention of data being forward either to a router or out the switch based on previously received routing information in Chaudhuri." On the contrary, Chaudhuri et al. disclose that the routing logic may receive a setup message (selectively received from inputs that

include control messages and data) and retrieve routing information from the message that is used to dynamically control the forwarding of subsequent data streams on the channel/route that is specified by the received setup message (page 6, paragraph [0077] and page 7, paragraphs [0086] and [0089]).

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christina Y. Leung whose telephone number is 571-272-3023. The examiner can normally be reached on Monday to Friday, 6:30 to 3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571-272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Christina Y Leung
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